

REMARKS

Claims 1-2, 4-12, 14-17, 19-33, 35-60, 62, 63 and 144-175 are pending in this application. As a result of a previous restriction requirement, claims 64-143 have previously been withdrawn.

The Examiner in the outstanding Action has allowed all pending claims except for claims 48-50, which stand rejected. Claim 50 is indicated as having allowable subject matter and would be allowed if rewritten to include all of the limitations of the base claim and any intervening claims, once the 112, 2d paragraph rejection is overcome.

Claim Rejections under 35 USC 112

Claims 48-50 are rejected under 35 USC 112 on the ground that they contain the phrase “less than about”. The rejection of claims 48-50 is respectfully traversed. The use of the term “about” does not render a claim indefinite under 35 USC 112. See MPEP 2173.05(b)A. Therefore, use of the phrase “less than about” also does not render a claim indefinite under 35 USC 112.

Claim Rejections under 35 USC 103

Claim 48 is rejected under 35 USC 103(a) over USP 5,751,426 to Nose in view of USP 6,556,305 to Aziz. The rejection is respectfully traversed.

Claim 48 has been amended to add the limitation that “wherein the image of the portion(s) of one of the two structures is substantially distinct from the image of the portion(s) of the remaining one of the two structures.” In other words, the images from the two structures formed on the detector(s) are distinct from one another. In Nose, this is not the case at all. Instead, Nose relies on interferometry, where signals collected from the two structures interfere when they arrive at the detectors. Therefore, images of the two structures are not distinct at the detectors. Thus, the detection scheme of claim 48 relies on imaging whereas that of Nose relies on interferometry. In view of such vast difference, it is believed that there is no reason or motivation for one skilled in the art to modify the interferometry scheme of Nose to arrive at the imaging scheme of claim 48.

In regard to claim 48, the examiner is of the opinion that, even though Aziz does not give the specific integration time, it would nevertheless have been obvious to one skilled in the art that to have an integration time of 10 milliseconds “to prevent blurring of the image.” We disagree. Because of the difference noted below, the considerations on the integration time of the detectors for claim 48 are very different from those of Aziz. Thus, the considerations on the integration time of the detectors for claim 48 are directed to avoid the blurring of images in the XY plane of the sample/reference surface as a result of environmental causes such as vibrations. See the specification page 16, lines 18-30. In contrast, the problem sought to be solved by Aziz is that where the optical path difference in the Z direction in an interferometer is continuously varied, the phase difference measured also varies continuously. The finite integration time of the detectors then introduces errors. Thus, the root cause of errors in Aziz is continuously varying phase difference in the Z direction caused by scanning motion of the measurement system itself, whereas the root cause of errors in claim 48 is the blurring of images in the XY plane of the sample/reference surface caused by environmental causes such as vibrations. Thus, what may be a desirable or practical integration time for one typically does not apply and is totally irrelevant with respect to the other. Hence, we believe that one skilled in the art would not be able to make the right guess of the limitation “less than about 10 milliseconds” of claim 48 in view of Aziz. Furthermore, Aziz also failed to disclose any particular value for the integration time of the detectors. However, even if he did, such value would still be totally irrelevant with respect to the limitation “less than about 10 milliseconds” of claim 48.

Moreover, the reason given by the Examiner on why the “less than about 10 milliseconds” would have been obvious to one skilled in the art in view of Aziz, namely “to prevent blurring of the image,” is not supported in Aziz and does not apply here. Aziz’s system is not an imaging system; rather it is an interferometer where prevention of image blurring is simply irrelevant.

Furthermore, in view of the differences between Nose and Aziz, there appears to be no reason or motivation to combine them in the manner urged by the Examiner. Nose relates to a system for detecting positional deviation using optics where there is no relative motion between the sample measured and the optics. Aziz, on the other hand,

relates to an interferometer where the sample surface or reference surface is continuously scanned by a ramping scanning mechanism. Aziz attempts to compensate for the limited integration time by choosing a pulse length that is shorter than the detector integration time. In view of the vast differences between Nose on one hand and Aziz on the other, there appears to be no reason or motivation to combine them, and the Examiner has failed to provide any.

Claim 49 is rejected under 35 USC 103(a) over USP 5,751,426 to Nose in view of USP 5,130,554 to Nose. The rejection is respectfully traversed.

The Examiner admits that the '426 patent fails to disclose pulse width of the radiation used to measure misalignment between two structures, but argues that this is supplied by the '554 patent, referring to column 9, lines 35-45 of the '554 patent. The Examiner's reliance on the '554 patent is misplaced. Column 9, lines 35-45 of the '554 patent merely describes using voltage pulses of 10^{-5} seconds in width to write the fine positioning marks 105 onto gold film 104. This section describes nothing concerning pulse width of radiation used to measure misalignment between structures. Therefore, we believe that the '554 patent is irrelevant and should be withdrawn as a reference.

Moreover, in view of the vast differences between the two patents to Nose ('554 and '426), there appears to be no reason or motivation for the combination urged by the Examiner. The '426 patent relates to a system for detecting positional deviation using optics where there is no relative motion between the sample measured and the optics. The '554 patent relates to a system for detecting position between two movable objects where the objects are scanned.

We appreciate the Examiner's indication that claim 50 would be allowable if rewritten in independent form. This has now been done so that claim 50 is now believed to be allowable.

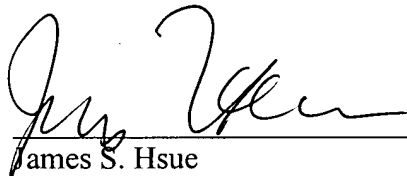
We also disagree with the statement of reasons for the indication of allowable subject matter to the extent that it is deemed to apply to claims other than claims 59 and 60. The statement appears to be directed to subject matter that combines features from different claims, such as claims 1 and 50. Since claim 50 does not depend on claim 1, we believe that the statement does not apply to any of the claims indicated to be allowable, whether in their present form or rewritten in independent form.

Claims 1, 2, 4-12, 14-17, 19-33, 35-60, 62, 63 and 144-175 are presently pending in the application. Reconsideration of the rejections is respectfully requested and an early indication of the allowability of all the claims is earnestly solicited.

CONCLUSION

In view of the amendments and remarks contained herein, it is believed that all claims are in condition for allowance and an indication of their allowance is requested. However, if the Examiner is aware of any additional matters that should be discussed, a call to the undersigned attorney at: (415) 318-1162 would be appreciated.

Respectfully submitted,



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Date